

Fiber-Optic Environmental Radiation Dosimeter

Advantages/Features

Detects the presence and the amount of radiation

High sensitivity over a wide range of radiation levels, better than 10 millirems

Easily manufactured in large quantities

In situ measurements reduces manpower requirements

No off-site data processing required

Economical enough to be disposable

Durable enough to be reused

Environmentally and biologically friendly

Applications

Energy sites and surrounding areas

Radioactive material storage sites

Ground water or soil monitoring

For more information contact:

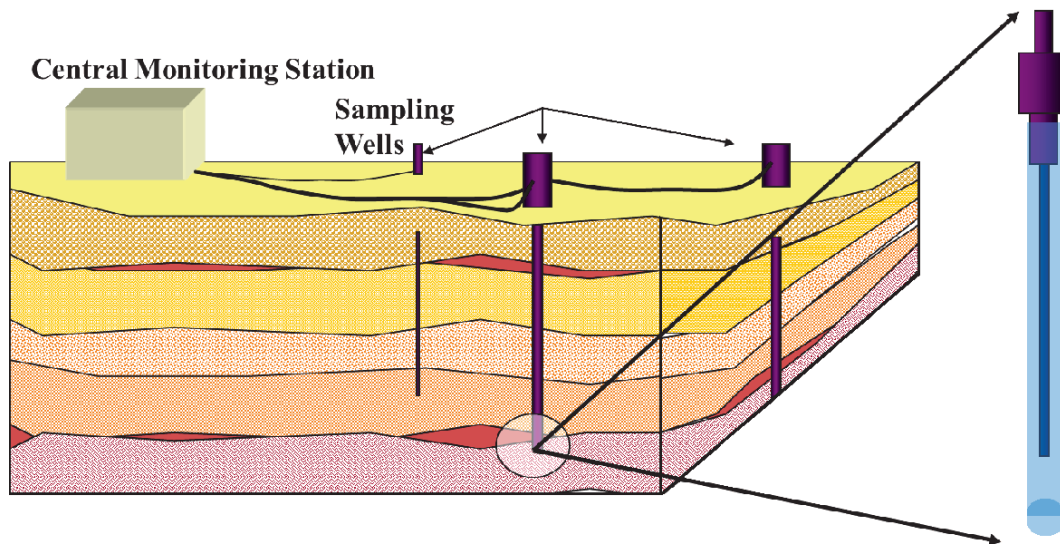
Rita Manak, Ph.D. Head,
Technology Transfer Office

(202) 767-3083

rita.manak@nrl.navy.mil

Identification Number:

SEN45



The Naval Research Laboratory (NRL) has patented an all-optical, fiber-optic-coupled remote radiation sensor using NRL's luminescent, copper-doped quartz material. The key to the technology is the doped quartz material that produces a luminescence signal that is directly proportional to the radiation dose. Individual sensors have an estimated cost of \$50 and a lifespan of decades. The sensor is less than 7 mm in diameter by 10 cm in length and is fiber-optic-coupled to a photodetector that is remotely located away from the potential radiation source. The small, flexible sensor can detect low levels of radiation in underground pipes or boreholes. The sensor's ability to withstand exposure to moisture, high temperatures, and corrosive conditions allow for extended operation in multiple mediums. Durability is important for monitoring low levels of radiation accumulated by the sensor over a time span of interest. The sensor can also provide in situ, near-real-time data. The sensor is sensitive to all types of radiation, including tritium and alpha particles. The fiber-optic coupled radiation sensors can be configured with hundreds of sensors connected to one readout unit. The fiber-optic radiation monitor can identify dangers to the environment, property, and critical plant coolant systems.

References

"Fiberoptic-coupled, Laser-heated Thermoluminescence Dosimeter for Remote Radiation Sensing". Appl. Phys. Lett., 68, 3377-3379: 1996.

Licenses are available to companies with commercial interest.



technology